Flight

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE AERO CLUB OF THE UNITED KINGDOM

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A REMINISCENCE OF BLACKPOOL FLIGHT MEETING.—The crowd negotiating the "plank walk" on the Fri[illegible] to view the machines in the aviators' sheds (top photograph), and a corner of the aerodrome showing part of the shilli[illegible] enclosure.

AFEGUARDING SPORT AND COMPETITION.

onfirmation were needed from abroad in support of
ıt actions taken by the Aero Club of the United
gdom, or of the policy that has been advocated so
istently by FLIGHT in the various leaders we have
n on this subject, there is no mistaking the fact that
confirmation has been forthcoming from the resolu-
s which have been passed by the Commission
ienne Mixte in France at their sitting of about a week
. This Commission, as most of our readers know, is
joint body which represents all the chief institu-
ns in France, for it not only includes the Aero
ıb de France, the Chambre Syndicale, and the Ligue
tionale, but also the Automobile Club de France, while
is itself represented in the International Federation
ough the Aero Club of France. No question can,
erefore, be raised as to its essentially representative
ıracter, and we need hardly add that the Aero Club of
s country, with its Associates, the Aeronautical Society
d the Aerial League, have the full moral backing
d co-operative support of this powerful French com-
ıation. The line which has now been adopted by
Commission in as definite a manner as is
ly possible is, on the one hand, that means
to be available for checking any tendencies that
might otherwise be towards the making of unreason-
demands on the part of any aviator when about to
a demonstration or to take part in any sort of per-
nance, whereas, on the other hand, the promotion of
ıat we in FLIGHT have called mere "circuses" (*i.e.*,
id for demonstration flights) cannot possibly be con-
tent with the strict control of competitive or other
ents, nor be compatible with unassailable methods of
ance. Similarly, too, the Commission, rightly, as we
ık, deem it their duty to guard against dangerous
itions or those which can do no good for the cause,
e whole upshot being that, as far as France is con-
rned, they have now positively decreed against profit-
ıing aviation meetings of any kind, and also against
ticipation by any individuals who are not bound down
espect C.A.M. rules. Briefly stated, disqualification
n participation in any further official events
in future immediately follow upon the holding
any meetings in France that are unlicensed by
C.A.M., and an authority will only be issued to
ınising institutions or groups that can strictly be
med "societies of encouragement," inasmuch as any
oceeds there may be in excess of expenditure is to go
rect to the immediate or some other prize fund, or is at
y rate to be devoted in some direct manner for the
ancement of aviation. Simultaneously the present
ılutions render it incumbent, after January 1st next,
every participant in any competition or meeting to
vide himself with an Aero Club licence.

he actual resolutions passed by the Commission are
plementary to and were expressly recognised as being
irect accordance with the decisions arrived at by the
ernational Federation in their Conference at Zurich,
n a strict rule was adopted guarding against the entry
npetitors in events for which they were unable
y to take part. Of course, the fresh rules go very
further still, as already suggested above, for not
oes the Commission reserve the right to suspend
revoke the licence of any aviator who acts in opposi-
n to its rulings, but (1) it stipulates for the full
counts of any meeting that it may approve being sub-
juently submitted to it for perusal; (2) it stipulates
that the money must be available beforehand for liquidating all such obligations as prizes and so forth, and (3) it even goes so far as to threaten disqualification of organisers and competitors alike, if contracts other than those set out in the programme for a meeting are not specially communicated to the Commission.

Apart from the significance and importance of this move that has been taken in France, and for what it foreshadows in the United Kingdom, there is something extremely significant about it that all who are interested in flight in Great Britain would do well to bear in mind. Coming as it does after all the pother there has been over the Doncaster Meeting, and the utterly unjustifiable attacks which have been made on the Aero Club of the United Kingdom in connection with that meeting, any partly convinced or unconvinced reader of FLIGHT who may not hitherto have seen altogether eye to eye with us in this matter, will observe that in France at least all the leading spirits in the aeronautic world are inclined to give their unhesitating official backing to every known move that has been taken by the A.C.U.K. in connection with Doncaster. It is fortunate indeed for any doubters or waverers that the Aero Club letter, which has thrown a good deal of retrospective light on the Doncaster business, should have just made its appearance in the Press (we give it elsewhere this week) at the same time that this French attitude has been made plain. It had even been suggested by some that the refusal of the Aero Club to sanction the Doncaster meeting was likely to be repudiated by the International Federation, in whose name they acted; and that the parent British club had put itself out of sympathy with the movement as a whole. But now the whole weight of French opinion, from those best qualified to form sound views of what is needed and what is not, goes unmistakably to confirm the wisdom of the Aero Club in all its dealings with the Doncaster promoters; and goes so much further, indeed, that we are glad to think the "circus business" is practically doomed already, after its relatively very short run.

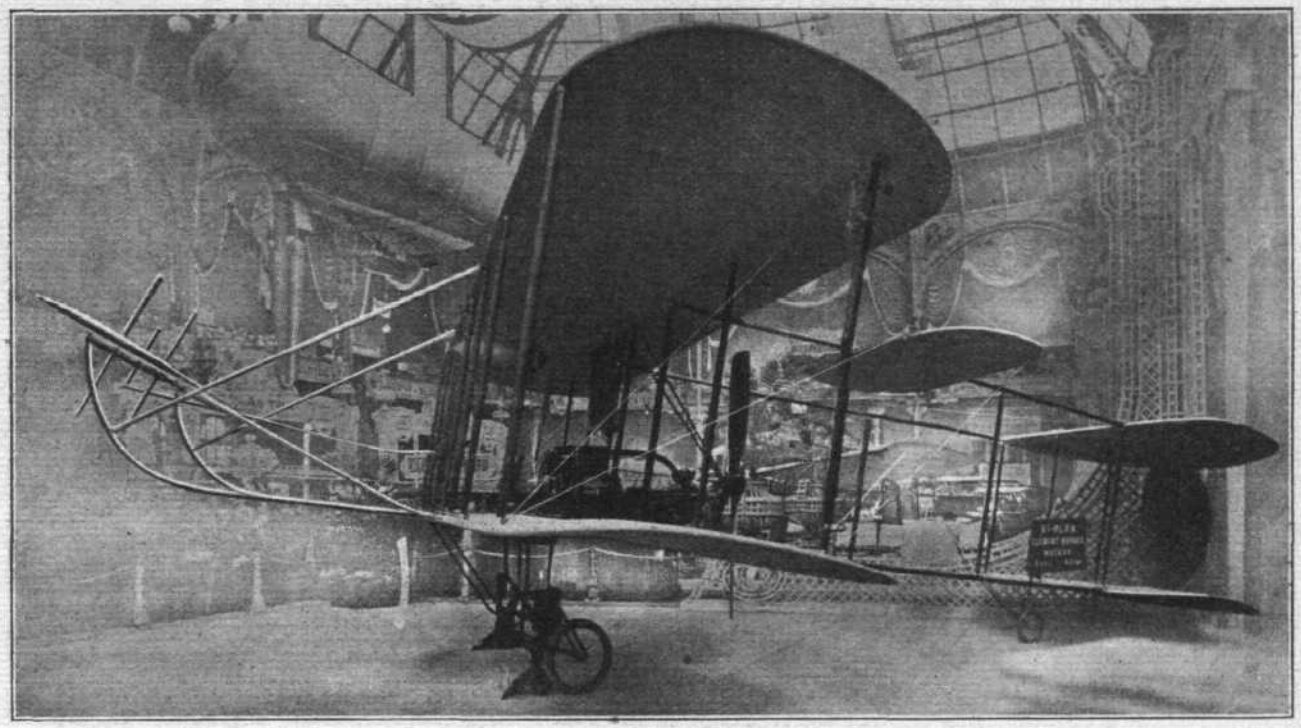
We are glad to think that an altogether brighter outlook looms ahead, and that at Doncaster, after all, a very much better stroke of work was done for the advancement of the cause than was intentionally embodied in the plans by its originators. The warning note raised by it may confidently be expected to have drawn the attention of thousands of people in this country to the real situation, and to the hollowness of the pretences that are always apt to be put forth in the early days of any movement by self-seekers after notoriety or advancement. Those who are the real supporters of the rapidly-growing movement will realise that there is a vast amount of work to be done by the representative institutions of the land. They will also see that it is by no means all talk and glamour that is needed for their national bodies; while most important of all, it will dawn on some that the name given to the parent institution is immaterial, since, in any case, *the* controlling body must itself be controlled by the joint authorities of the majority of owners, users, makers or advocates of aerial locomotion. There must, for instance, be a thrashing out of full details in readiness to enable this country to act in conformity with and contemporaneously with other members of the International Federation as regards the issue both of licences and of the British declaration of policy towards competitive meetings and those who take part in them.

FLYER SILHOUETTES FROM THE PARIS SALON.

(*Continued from page 720.*)

CLEMENT-BAYARD.

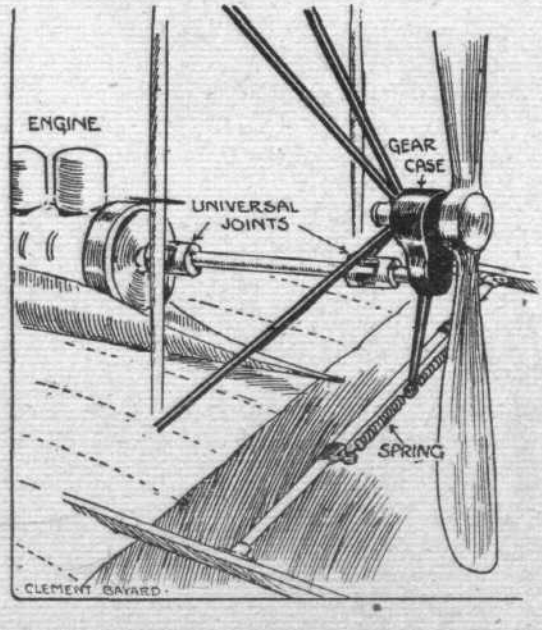
BIPLANE with tail and elevator. The lines resemble a combination of the Wright and Voisin systems of construction, inasmuch as the elevator, outrigger, and shape of the main decks have features in common with the American machine, while the tail is essentially a



Clement-Bayard Biplane at Paris Flight Show.

Voisin detail, albeit on this model it is not of the box-kite form. No panels are used anywhere, nor is there even a prow on the elevator.

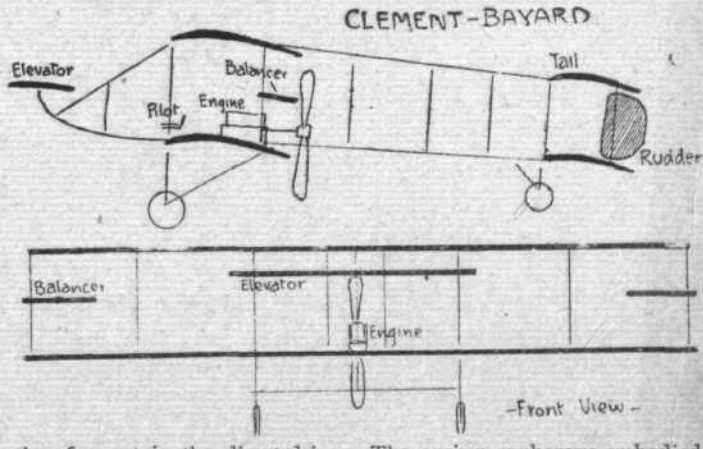
The most interesting detail on this machine is the spring-drive and gear-reduction mechanism for the propeller. The propeller



Sketch showing the gear-drive for the propeller on the Clement-Bayard flyer.

itself is mounted on a kind of double bracket, one part of which is rigidly fixed to the machine, while the other rides on the first, and is anchored to the frame of the machine by a spring-suspended torque-rod. This latter bracket provides a casing and support for "walk" bodily round the gear-wheel on the propeller, an action which is permitted to a limited extent by the spring anchorage just described. An accompanying sketch shows the general arrangement of this detail on the machine.

The use of a gear-mechanism is for the purpose of adapting the engine speed to a more efficient type of propeller. The average high-speed petrol engine is commonly considered to run too fast for a good design of propeller, but on the other hand gear-reduction mechanism is in itself a source of lost power, and many makers

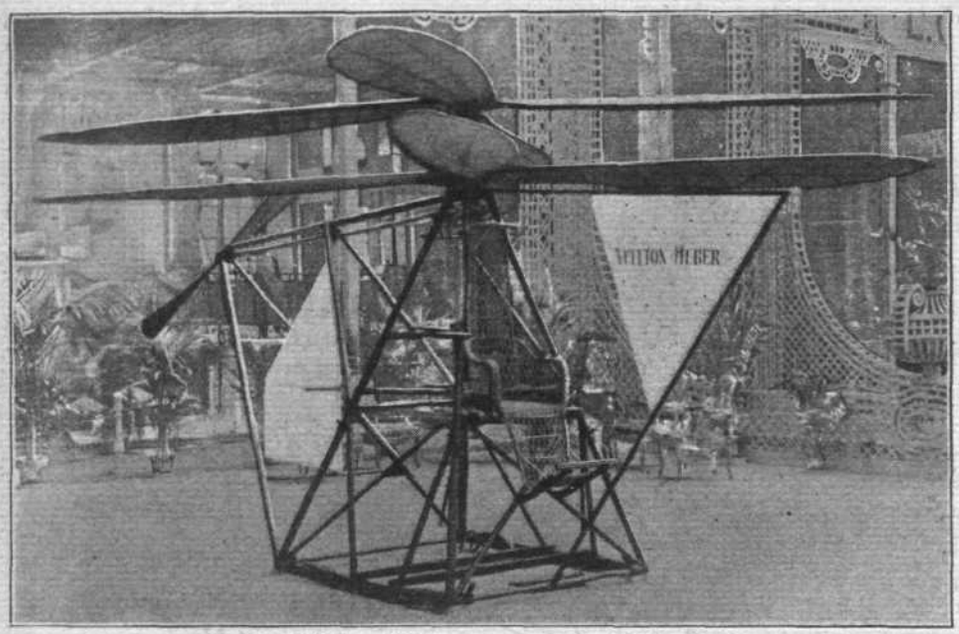


therefore retain the direct-drive. The spring anchorage embodied in the Clement-Bayard system plays much the same part as is performed by a spring-suspended torque-rod on the modern live-axle automobile.

The control of the Clement-Bayard is effected by a steering-wheel and a pedal. Pushing the steering-wheel column bodily to and fro works the elevator, rotating the wheel operates the rudder. The pedal controls small balancing planes mounted between the main decks, near the extremities.

VUITTON-HUBER.

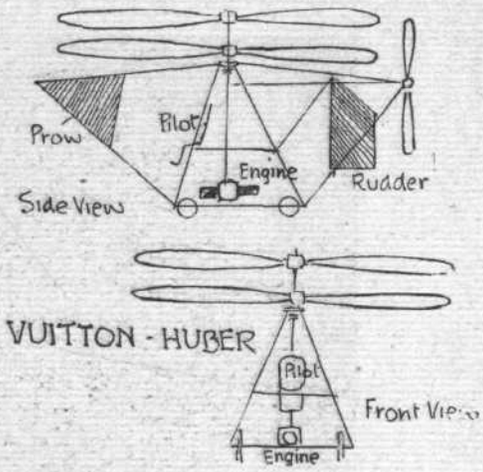
Helicopter with tandem lifting screws arranged to rotate in opposite directions. A third screw arranged as a propeller is intended to provide means for translation through space when the machine has once been raised from the ground. This latter pro-



Vuitton-Huber Helicopter at Paris Flight Show.

peller is of small diameter, but is driven at high speed, for the bevel-pinion on its shaft is one of those belonging to the reversing mechanism employed in the drive of the main screws. Provision is made for throwing the small propeller in and out of action at will by means of a jaw-clutch. The reversing gear, by means of which the lower lifting screw rotates in an opposite direction to the upper, consists of two main bevel wheels in opposition and in mesh with a set of three planet pinions mounted in a stationary cage.

The pilot sits immediately in front of the vertical propeller-shaft, and the engine, not shown on the model exhibited, is placed beneath. At the pilot's left hand is a lever for working a progressive clutch which combines a reduction gear—of the epicyclic type—of such ratio that the speed of the vertical shaft is reduced to 500 r.p.m. In front of



the pilot's seat is a fixed vertical triangular plane forming a prow to give steering-way, and behind the machine is a rudder.

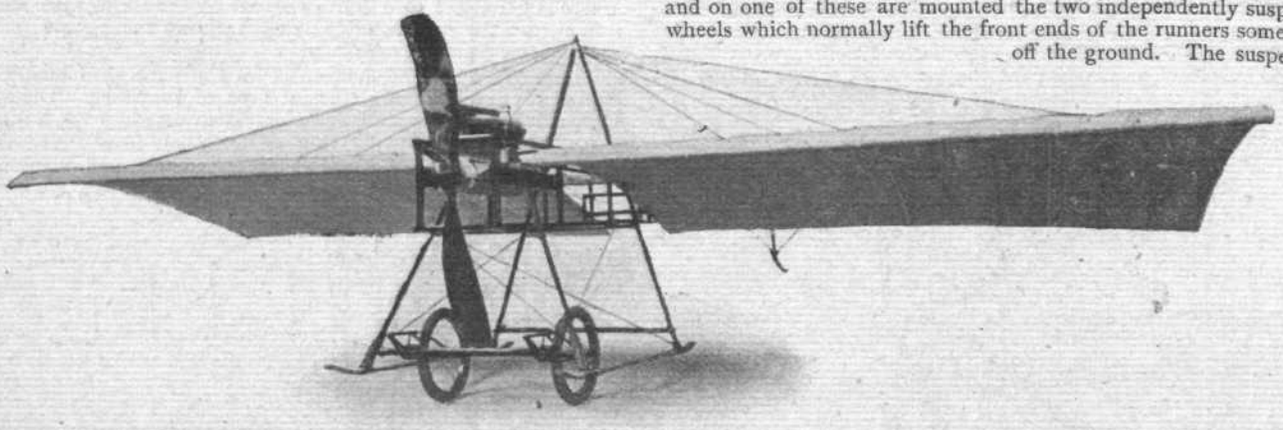
The frame is built in pyramid form, mostly of bamboo, which is bound throughout with tape. Elsewhere hollow wood members are used.

The engine, when fitted, is to be of 120-h.p.; the machine weighs in its present state 169 kilogs. The lifting screws are 5 metres in diameter, and rotate at 500 r.p.m. The pitch is not given. The small propeller is 1·7 metres in diameter.

HANRIOT.

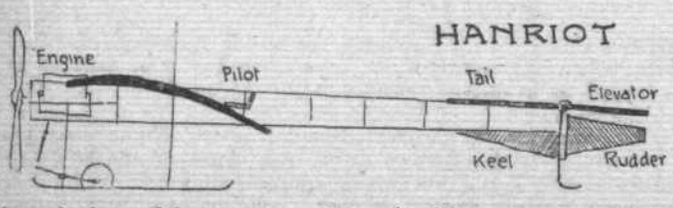
Monoplane, principally interesting on account of the design of the chassis, which is well illustrated in the accompanying photograph. The construction has the appearance of being both light and strong; short at the engine bearers, which lie longitudinally in the main frame of the machine.

Transversely between the two runners two steel tubes are arranged, and on one of these are mounted the two independently suspended wheels which normally lift the front ends of the runners some 8 ins. off the ground. The suspension,



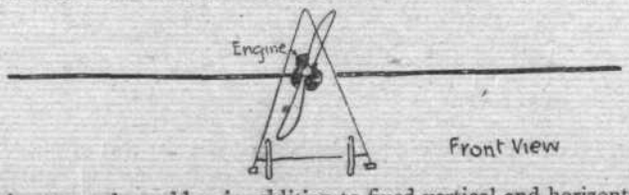
Hanriot Monoplane at Paris Flight Show.

it certainly gives evidence of more desire to avoid complication than do many systems of bracing. It will be noticed from the illustration that four wood columns rise obliquely from the two runners which



form the base of the structure. One pair of these struts converge to a point well above the centre of the body, and from this apex, wires radiate for the support of the wings. The other pair of struts stop which is not properly shown in the photograph, consists of elastic springs connecting the wheel brackets to the frame.

As usual in monoplane construction, the engine is right in front, and drives a tractor screw. There is a tail at the rear, comprising



an elevator and a rudder, in addition to fixed vertical and horizontal planes. Provision is made for warping the wings, but in its present condition this system of control is not fitted to the machine.

ALEXANDER £1,000 PRIZE FOR BRITISH FLIGHT MOTOR.

IT will be remembered that at the meeting of the Aerial League on September 30th, Mr. Alexander offered a prize of £1,000 for the first British-built engine of medium horse-power which fulfilled certain conditions, the competition to be held under the joint auspices of the Royal A.C., the Aeronautical Society of Great Britain, the Aero Club of the U.K., and the Aerial League. The regulations have now been drawn up, and are as follows:—

General Regulations.

The tests will be carried out at the National Physical Laboratory under the sole control of the Advisory Committee.

Machine of British Manufacture.—The machine to be of British manufacture.

Horse-power.—The motor to be designed to give 35 b.h.p. The machine will be required to reach this b.h.p. on a preliminary run.

Description.—The maker to supply a detailed description and drawings, together with a statement of the principal features of the machine. The drawings to show the engine, radiator, tanks, &c., fixed to a known type of aeroplane, so that the length of the connecting pipes can be determined and impossible combinations for trial purposes guarded against.

Limit of Weight.—Motors weighing more than 245 lbs., that is, 7 lbs. per b.h.p., will not be admitted for competition. For the purposes of this clause the weight shall be taken to include the weight of the motor itself with crank-case and supporting arms, and all parts necessary for ordinary running, also the cooling apparatus with all accessories (clauses 18, 19). It will not include the supply of cooling water, petrol and lubricating oil, or the containing vessels for these.

Couplings to be Provided.—To enable the motor to be coupled up to a dynamo for the determination of its efficiency, and also for the application of the required end thrust or pull, the motor-shaft is to be provided with two half-couplings to the design shown in Fig. 1.

Mounting for Purposes of Test.—To facilitate the erection of the machine on the testing apparatus, the motor, with radiator, must be mounted so that it can be bolted to the pair of adjustable testing-rails shown in Fig. 2.

Patents.—Each competitor to take any steps he may desire to protect his machine by patent.

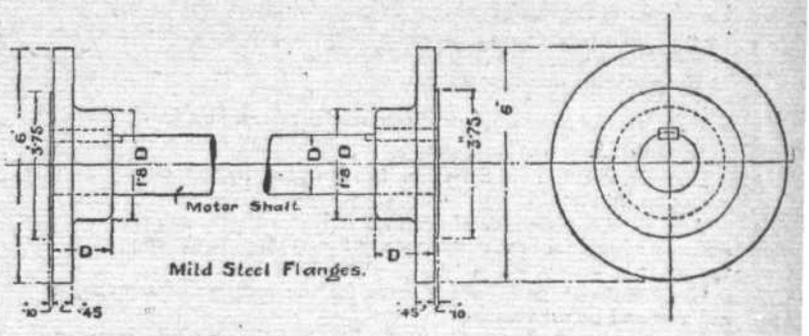


Fig. 1.—Dimensions of Coupling.

Interpretation of Regulations.—The interpretation of these regulations or of any to be hereafter issued shall rest entirely with the Committee, which may at its discretion waive, alter, add to, or omit from any or all of them from time to time.

If any disputes shall arise in connection with these regulations or with any that are hereafter issued, or with the trial, the decision of the Committee shall be final and binding.

[Clauses follow defining that no responsibility rests with the Committee in regard to damage to engine or appurtenances. Any damage done by the maker or his representative must be paid for by the entrant. Right of action is waived against the Committee and Judges, &c., for any damage during or arising out of the tests. Makers must insure their employees against damage by accident.]

Conditions of Test.—The main points which will be considered in the comparison of motors admitted for competition will be:—

A. Weight and consumption of petrol per b.h.p.
B. Reliability and steadiness of running.
C. Wear of working parts.
D. Security against fire.
E. Air resistance offered by the motor and accessories.

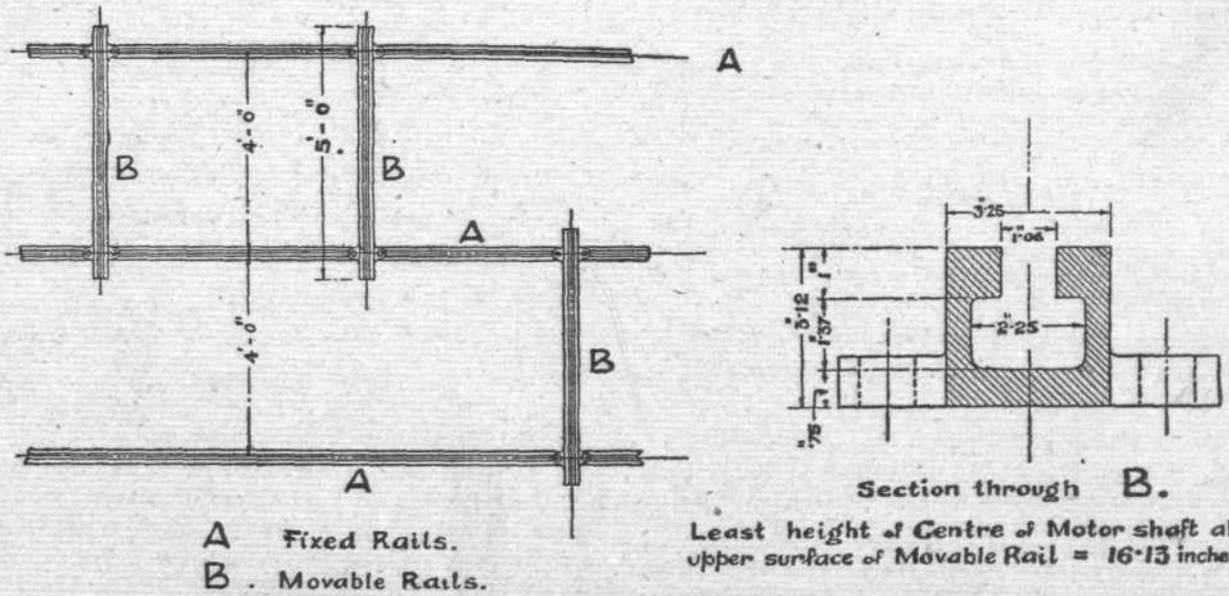


Fig. 2.—Arrangement of Support for Motor Testing.

Price.—The price to be stated, and the first option for the purchase of the machine at the price at which it is entered to rest with the Advisory Committee until the report on the tests is issued.

Acceptance of Regulations.—Every competitor and his representatives, mechanics, or other employees shall be considered to be acquainted with these regulations and by entering undertakes to abide without dispute by all the conditions therein contained, and by any regulations which may be hereafter issued by the Committee or their authorised representative, and by the results to which such rules and regulations may lead.

Committee's Decision Final.—In the event of any point arising under, or which is not covered by, these regulations, the Committee shall have power to decide upon the same and its decision shall be final and shall *ipso facto* become a regulation of the trials.

A. Weight and Consumption of Petrol per B.H.P.

In the Total Weight, for purposes of comparison, will be reckoned:—

The weight of the motor itself with crank-case and supporting arms and all parts necessary for ordinary running, as for instance—the carburettor and regulator, the automatic lubricating apparatus, the ignition, together with the necessary accumulators, coils, &c., sufficient for the time of the test, the connecting tubes for the water

between the radiator and motor, and the attachments referred to under B.

The cooling apparatus with all accessories, *e.g.*, fans and their gear.

The necessary supply of water for the radiator (if the motor is water-cooled) for a six hours run.

The weight of the petrol and lubricating oil for a six hours run.

The weight of the vessels required for the petrol, oil, &c., for a six hours run. This will be reckoned as a percentage addition to the weight of the materials—10 per cent. for petrol and 20 per cent. for oil. (The petrol and oil vessels must be provided and must be of sufficient content for a 24 hours run.)

The standard coupling flanges.

In the Weight of the Motor will not be reckoned:—

Exhaust boxes and connections.

The fly-wheel, if a fly-wheel be provided in accordance with clause under E.

Any friction-clutches and gearing, and also the foundation bolts and any additional brackets necessary for bolting the machine to the testing-rails.

Constructional parts which serve for the purpose of support of radiator and petrol vessels.

The petrol and oil vessels supplied for the 24-hour run, in place of which (as indicated under A) a definite percentage will be added in the calculation.

B. Reliability and Steadiness of Running.

The motors will be tested on a 24 hours run. If from any cause during this run a stoppage is necessary, the time and cause of such stoppage will be noted and entered on the record sheet. This time will be included in the 24 hours for which the test lasts. If the number of stoppages exceed three, or if the total time occupied by such stoppages exceed half-an-hour, the motor is thereby disqualified.

While the motor is running the only adjustments permitted are those which can be made by the lever for the ignition and carburettor. The handling of the motor for any other purpose, *e.g.*, oiling by hand, is not allowed.

Attention will be paid to the balance of the moving parts, and to freedom from vibration of the frame of the motor when under test.

After the endurance test the machine will be placed on elastic supports and run at different speeds to determine whether any periodic disturbance of a dangerous character is set up.

An additional test will be made to determine whether the motor will work satisfactorily when tilted (about an axis transverse to the shaft). Two runs of an hour each will be made at full load at an angle of 15°, first one end and then the other being uppermost.

In addition to the above, ease of starting will also be considered.

C. Wear of Working Parts.

After the tests the engine will be dismantled and taken to pieces by the representatives of the makers in the presence of the representatives of the Committee, and a record made of any signs of wear or defect.

D. Security against Fire.

The design and construction to be such as to give security against fire. The machines will be examined during and after the tests for any signs of leakage, or of accumulation of petrol on the casing of the engine or elsewhere.

E. Air Resistance offered by the Motor and Accessories.

Credit will be given for a design such that the resistance offered to the wind is low.

FURTHER PARTICULARS AS TO THE TESTS.

Propeller Thrust.—The tests will be made on the motors alone without propellers, but to represent the thrust or pull of the propeller an artificial thrust or pull of 175 lbs. weight will be applied.

Fly-wheel.—For the purposes of the tests the motor may be furnished by the maker with a fly-wheel having a moment of inertia not exceeding that of a disc, of uniform material and thickness, 2 ft. in diameter, and weighing 75 lbs.

Additional fly-wheel action is provided in the rotating armature of the dynamometer.

Test Under Constant Brake Moment.—Before the commencement of the tests the maker will be required to declare the speed at which the motor will develop 35-b.h.p. The tests will be made at a constant brake moment calculated from the h.p. and this declared speed.

Record of Test.—A record will be kept throughout the tests in which will be noted all irregularities of speed and h.p.

Repairs and adjustments made during the 24 hour test will also be recorded in accordance with Clause 1 B.

The record will also note the general behaviour of the motor and its condition after the completion of the test.

Test Made in Air Current.—The tests will be made in an air current delivered with a velocity of approximately 30 miles an hour from a horizontal trunk, 4 ft. × 4 ft. in section. The mouth of the trunk will be at a distance of about 6 ft. in front of the motor.

Maximum H.P.—A test will be made to determine the maximum b.h.p., defined as the highest b.h.p. maintained by the motor for seven minutes continuously.

Gyroscopic Action of the Propeller in Steering.—A test will be made to determine the effect of the gyroscopic action of the propeller in steering. To represent this action a couple of 50 ft.-lbs., in a vertical plane, will be applied to the motor shaft for three minutes while the machine is running, and the effect on the speed and brake moment noted. During this test no adjustment of the motor will be allowed.

Additional Tests.—Such additional tests and measurements will be made as may appear to the Committee to be necessary for the purposes of the competition.

Superintendence of Engine while under Test.—The makers will be required to set up the engine. They will also be required to arrange for the superintendence of its working during the tests. Two men will be necessary in order that one or the other may be present during the whole of the 24 hours' run. In addition to these two only one representative of the makers will be permitted to be present on any one day.

Preliminary Runs.—Preliminary runs will be allowed during one day before the actual tests commence in order to get the engine into satisfactory working condition.

The time at which the 24 hours test is to commence will be fixed by arrangement with the competitor. A run will be permitted immediately in advance of the time so fixed in order that steady running conditions may have been reached before the actual trial is begun.

Temperature at which Tests are Made.—The tests will be made at an air temperature in the neighbourhood of 60° F.

Petrol Supplied.—The petrol used must be obtained by the maker at the National Physical Laboratory. A standard petrol will be supplied at the current market price. A sample can be obtained in advance on application to the Director, the National Physical Laboratory, Teddington, Middlesex.

Example of the Weight Calculation.

Weight of a 35-h.p. motor complete	140 lbs.
Radiator and accessories...	60 ,,
Weight of water for cooling purposes	60 ,,
,, petrol for a six hours run	175 ,,
,, lubricating oil ,, ,, ...	10 ,,
,, vessels for holding petrol	17·5 ,,
,, ,, ,, lubricating oil ...	2 ,,
Standard coupling flanges	15 ,,
	479·5 lbs.

Entries will not be received before February 1st or after April 30th, 1910.

They must be made on entry forms obtainable from the Secretary after January 1st, 1910, and must be accompanied by a description and drawings as required by Regulation (3), and an entrance fee of Five Guineas.

Enquiries as to the Competition should be addressed to the Secretary, Advisory Committee for Aeronautics, Bushy House, Teddington.

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"Ecole Superieure d'Aeronautique."

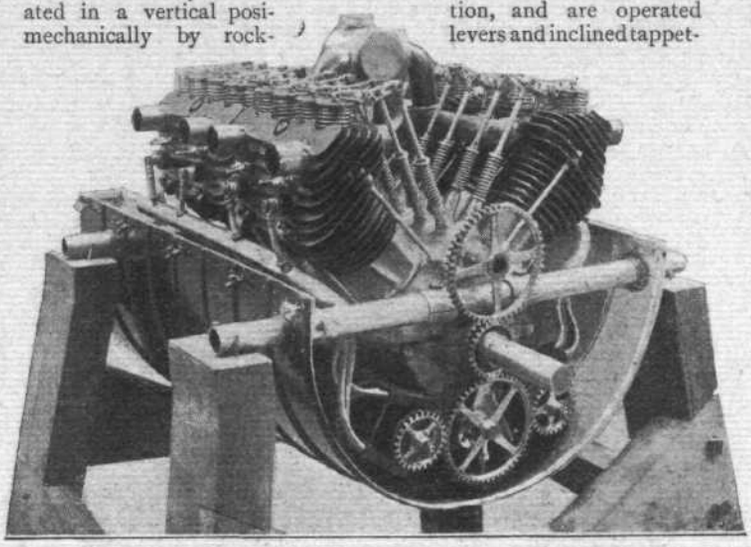
IN our issue of October 30th, we referred to the founding of this institution, which opened its doors on Monday last, when Professor Painleve delivered his first lecture. Three professors have been appointed, M. Painleve taking as his subject "Mechanics of Flight," M. Lecornu, who will deal with motors, and Commandant Renard, who will deal with general aeronautics. In addition, there is a staff of ten lecturers. Arrangements have been made for the reception of 120 students, and in addition to their theoretical studies under the professors, they will be instructed in workshop practice and tests of machines, and arrangements are to be made for visits to works, &c.

FLIGHT ENGINES AT PARIS SHOW.

(*Continued from page 725.*)

Fiat 50-h.p.—Eight-cylinder air-cooled V-type engine. The cylinder-heads are cast separately, and are each held in place by three long bolts, which pass into the crank-chamber and also hold down the cylinders. All the valves are situated in a vertical position, and are operated mechanically by rockers and inclined tappet-rods from a single central cam-shaft lying above the crank-shaft. The gear-wheel driving the cam-shaft is exposed, and there is another similar wheel beneath the crank-shaft which drives two independent magnetos. One magneto serves a set of four cylinders.

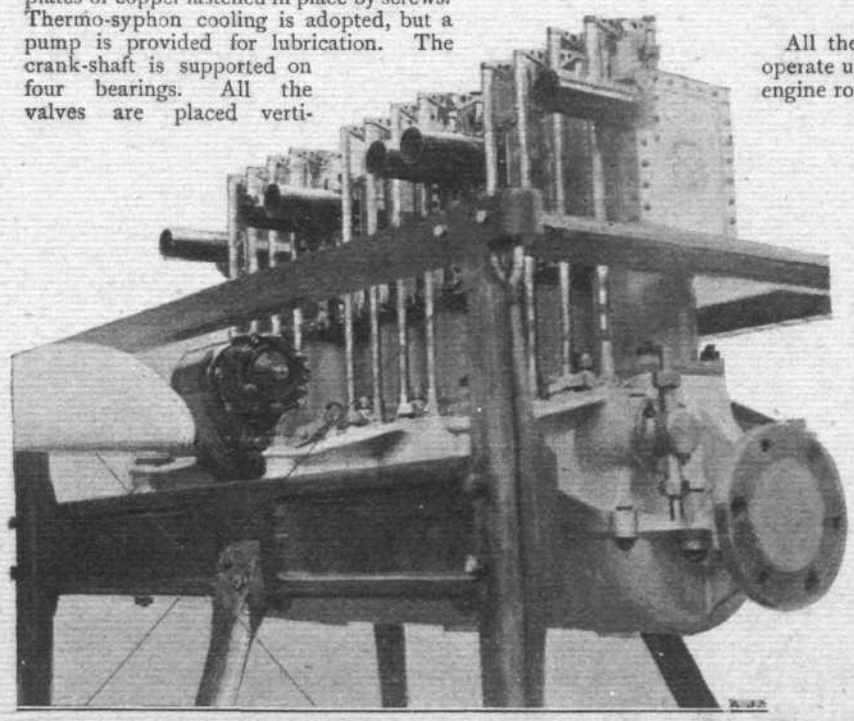
Dimensions.—Weight, 60 kilogs. ; h.p., 50.



PARIS FLIGHT SHOW.—View of the 8-cyl. Fiat air-cooled engine, showing the arrangement of the two magnetos beneath the base-chamber.

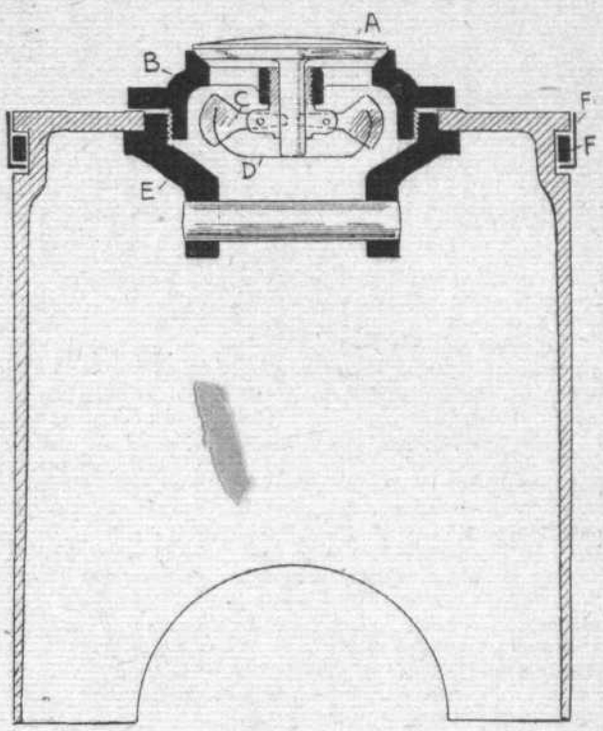
Buchet 47-h.p.—Six-cylinder water-cooled vertical engine. The cylinders are cast in pairs, and have built-up jackets formed by plates of copper fastened in place by screws. Thermo-syphon cooling is adopted, but a pump is provided for lubrication. The crank-shaft is supported on four bearings. All the valves are placed vertically in the cylinder-heads, and are mechanically operated by overhead rock-levers worked by long tappet-rods from a single cam-shaft. Magneto ignition is provided.

Dimensions.—90 mm. by 110 mm. ; weight, 110 kilogs. ; h.p., 47 at 1,325 r.p.m. ; price, 7,000 francs.



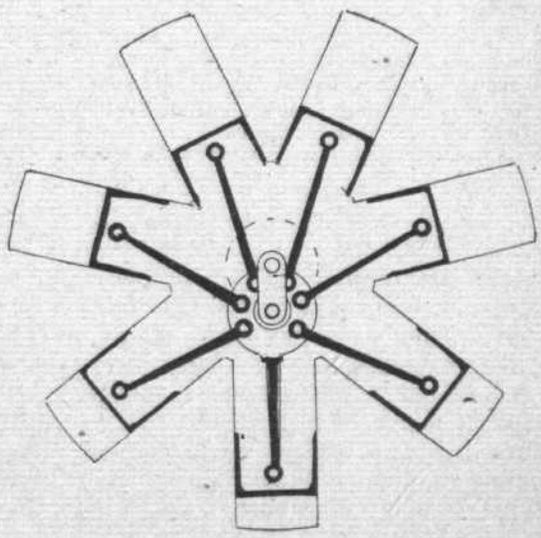
PARIS FLIGHT SHOW.—View of the 6-cyl. Buchet engine. This is almost the only 6-cyl. flight engine exhibited at the Salon.

Gnome.—Seven-cylinder radial rotary engine. The cylinders are machined separately from solid steel and are fastened in a special way to a steel cylindrical crank-chamber. The cylinders are air-cooled by their rotation *en bloc*.



PARIS FLIGHT SHOW.—Sectional sketch of the Gnome piston, showing the construction and mounting of the induction-valve. The compound piston-ring should also be noted.

All the cylinders lie in the same plane and the connecting-rods operate upon the same crank of the stationary shaft about which the engine rotates. An accompanying sketch illustrates diagrammatically the system adopted for coupling up the seven connecting-rods to the same crank. It will be observed that one of the connecting-rods is fitted with a rigid big-end of extra large size and that all the other connecting-rods are hinged to this member. The special point in this construction is the rigid connection between one of the con-



PARIS FLIGHT SHOW.—Diagrammatic sketch of the Gnome engine, illustrating the method of coupling up the connecting-rods to the single crank. It will be noticed that one connecting-rod is rigid with the common big end.

necting-rods and the big-end; as but for this rigidity the big-end would be liable to rock upon the crank-pin and thereby interfere with the operation of the engine.

The mixture enters the cylinder *via* the hollow stationary crank-shaft and atmospheric valves situated in the pistons. The construction and fitting of these valves shows great ingenuity, which is enhanced by the good workmanship that characterises the construction of the Gnome engine throughout. An accompanying sectional sketch shows the arrangement of one of these induction-valves. The valve, A, itself has a very short stem mounted in a guide provided by a bracket forming an extension of the member, B, which makes the valve seating. Two lugs on the valve-stem guide serve as pivots for a pair of small counterpoised weights, C, the inner ends of which engage with a slot cut in the valve-stem. The object of these weights is to balance the effect of centrifugal force on the valve itself. Centrifugal force necessarily forms one of the most important factors to be considered in the design of any rotary engine.

The valve-spring, D, consists of a couple of thin steel strips which are curved upwards at their extremities to partially embrace the balance weights. They are easily detached and replaced.

The valve with its seating and attendant parts form a detachable unit. The seating is mounted on the top of the piston by being screwed into a lug which carries the gudgeon-pin. This latter member is, of course, situated inside the piston, and the two parts, when screwed together, clamp the head of the piston between them. A feather-key defines their exact position.

Another very interesting point about the Gnome engine is that it has no piston-rings of the ordinary kind, these having been tried and found unsatisfactory in practice. Their deficiencies were mainly associated with difficulty in proper lubrication.

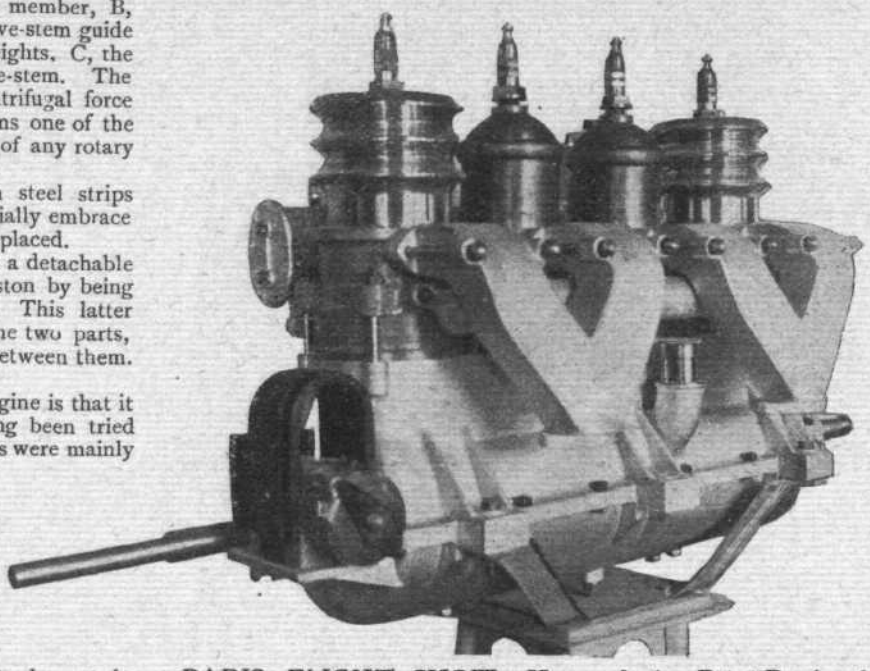
Instead of the usual piston-rings there is a compound ring of curious construction at the extreme upper end of the piston. The piston-wall at this place is recessed with a rather wide groove, in which lies the cast-iron piston-ring. Surrounding this ring is a thin brass band rolled into an L section, so that its narrow turned-up edge can engage under the cast-iron ring in order to retain the band in place. The band is, of course, split to enable it to be put in place, and its size is such that its ends just close when the surface of the band lies in contact with the cylinder wall. The split dividing the band is vertical.

The action of the band is analogous to that of the leather ring in a pump-bucket; it expands against the cylinder-wall when fluid pressure is exerted on the top of the piston. This is the only method adopted in the Gnome engine for preventing leakage of gas past the piston and it is important to mention that the clearance between the piston and the cylinder-wall is rather large. The piston, like the cylinder, is made of steel. A portion of the lower end of the piston is cut away to clear the connecting-rod.

Lubrication on the Gnome engine seems to have been satisfactorily accomplished by the use of castor oil. Farman has been in the habit of using a mixture of castor oil and petrol for this purpose. An objectionable feature of castor oil as a lubricant is the very unpleasant odour which it gives to the exhaust.

The Gnome engine appears to be thoroughly adequate in its air cooling; engines in practical use showing no signs of having been overheated. On one occasion, immediately after Farman had alighted from a flight which lasted for over an hour, we found it possible to touch all parts of the engine with the bare hand without discomfort.

Prini and Berthaud. — Two-stroke 4-cylinder water-cooled engine. The mixture is drawn into the crank-chamber from which it is admitted to the cylinders when the pistons uncover the inlet-ports at the end of the stroke. There are of course no valves other than the slots or ports in the cylinder, which are uncovered or closed automatically by the action of the pistons. Part of the exhaust is allowed to pass around the induction-pipe to warm the mixture.



PARIS FLIGHT SHOW.—View of the Prini-Berthaud two-stroke engine, showing two of the copper water-jackets removed to expose the cylinder-casting. As there are no valves the attachment of the copper jacket is considerably simplified. At the top it is merely held down by the ignition-plug.

The cylinders are cast separately, and as there are no valve chambers it has been possible to fit a copper water-jacket to each in a very simple manner. These corrugated jackets are held down by a flange at the bottom, and by the ignition-plug at the top.

Dimensions.—100 mm. by 110 mm.; weight, 95 kilogs.; h.p., 50 at 1,400 r.p.m.; price, 5,000 francs. (The weight includes a radiator.)

RULES FOR AVIATION MEETINGS.

AT the last meeting of the Federation Aeronautique Internationale, held at Zurich, four rules were drawn up which should form the basis of all rules governing aviation meetings. By his entry for a certain event, a flyer is bound by the first rule to take part in that event, unless, of course, he is prevented from some extraordinary cause. Also no entrant may enter for more than one meeting during the same day or period under pain of disqualification. The entry must be made by the pilot, and he will personally gain all prizes and records. All prize money and awards must be sent to the winners within fifteen days after the publication of the decision of the organising Committee, which must be ratified by the ruling body in each country representing the F.A.I. The decisions of the organising Committee can be appealed against to the National Club within fifteen days, and that is also the time allowed for entering protests. The last rule provides that the National Club shall enforce penalties against any competitor who makes a false announcement with regard to his performances. It also states that competing machines may bear no other trade announcement than the name of the constructor.

"Pilote-Aviateur" Certificates.

THE conditions for securing the *Pilote-Aviateur* certificate of the Ae.C. de France are to be made still more severe. After January 1st next, candidates will be required to make three flights of at least 5 kiloms. each in a closed circuit. Before each flight the aviator will be required to name his landing place, and he must descend within 150 metres of it. For this certificate, which will constitute a card of identity, there will be no charge. The Ae.C.F. certificate will not be given to aviators in a foreign country represented in the F.A.I. without the authorisation of the national authority, but it will be obtainable in countries not represented in the F.A.I.

AERO CLUB OF THE UNITED KINGDOM.

OFFICIAL NOTICES TO MEMBERS.

Committee Meeting.

A MEETING of the Committee was held on Tuesday, November 16th, 1909, when there were present: Mr. Roger W. Wallace, K.C., in the chair, Mr. Ernest C. Bucknall, Vice-Admiral Sir Charles Campbell, K.C.M.G., C.B., D.S.O., Mr. Martin Dale, Professor A. K. Huntington, Mr. F. K. McClean, Mr. C. F. Pollock, Hon. C. S. Rolls, Mr. J. Lyons Sampson, Mr. Stanley Spooner, and Joint Secretaries Capt. E. Claremont, R.N., and Harold E. Perrin.

New Members.—The following new Members were elected:—

William Mitchell Acworth.	William Barnard Rhodes Moorhouse.
Lord Basil Blackwood.	Donovan Maclean Rawcliffe.
Leonard G. Byng.	Herbert Flaxman Reason.
John Cates.	Miss Rose Gertrude Roberts.
Thomas W. Godsell.	G. Alan Simmons.
Mrs. Ernest Hart.	P. D. Stirling.
G. Haynes.	George W. T. Wade.
Milner Hurd.	Melville Ward.
Kumar Shri Jareja.	Lieut. Waterlow, R.E.
Miss Winifred L. Lockyer.	Percy Wright-Anderson.

Membership.

The membership of the Aero Club is increasing so rapidly that the 1,000 Founder Members are nearly complete. It is hoped, therefore, that Members will notify their friends who are thinking of joining, as immediately the total of 1,000 is reached, the subscription will be increased and an entrance fee charged.

New Premises.

The Committee have decided to acquire new premises, and reading, writing and committee rooms will be set apart entirely for the use of Members. It is hoped that the new premises will be ready by Christmas.

Annual Dinner.

The annual dinner will take place at the Whitehall Rooms, Hotel Metropole, Northumberland Avenue, W.C., on Wednesday, December 15th next. Members will shortly receive a circular containing full particulars.

Additional Flying Ground.

The Aero Club have made arrangements with the proprietor of grounds at Eastchurch, to be used as an auxiliary flying ground for their Members. The ground is situated within half a mile of Eastchurch Station on the Sheppey Light Railway, and the same railway facilities will apply as at Shellbeach. The surface of the ground is very level and free from ditches.

A limited number of sheds may be erected on the grounds, and full particulars can be obtained from the Secretary of the Club.

Federation Aeronautique Internationale.

The Aero Club have received from the Federation Aeronautique Internationale the names of its committee for the current year:—

Hon. President—M. L. P. Cailletet (France), Member of the Institute.

Vice-Presidents—

Professor Busley (Germany).	Roger W. Wallace, K.C. (Great Britain).
Fernand Jacobs (Belgium).	Prince Scipion Borghese (Italy).
Count Henri de la Vaulx (France).	Cortland F. Bishop (U. States).

General Secretary—Count de Castillon de Saint Victor.
Reporting Secretary—Col. Moedebeck (Germany).
Treasurer—M. Paul Tissandier.

The following regulations, which were passed at the Conference at Zurich in October, will now be enforced:—

When an aviator has entered for a meeting, he will be bound to appear except prevented by *force majeur*. In the event of his not starting, he will not be permitted to start in any contest which may be held elsewhere at the same period. Non-compliance with this regulation leads to disqualification and to a fine.

Records and prizes belong to the driver of the machine. The aeroplane "crew" are debarred from participating in the prizes.

The contests are won by the person whose name is entered for the engagement, and who must pilot the machine.

Prizes are remitted to the winners fifteen days after publication of the decision of the Federation. Complaints must be lodged with the Federation within fifteen days of the contest.

Penalties will be inflicted on all pilots making inaccurate reports of performances, and misleading advertisements will also be punished. Nothing in the shape of an advertisement may be displayed on aeroplanes with the exception of the constructor's name.

Shellbeach Flying Ground.

Members visiting the flying ground are requested to have with them their membership cards, as strict instructions have been given to admit only members to the flying ground.

Members are also reminded that access to the aeroplane sheds can only be obtained with the written consent of the owners of the flying machines.

Telephone.—The telephone has now been installed. Members wishing to telephone there are requested to ask for 5B Minster-on-Sea, Isle of Sheppey. The telephone is installed in the Club House, and also to the sheds on the grounds.

Erection of Sheds.—Members wishing to erect sheds at Shellbeach are requested to apply to the Secretary, who will supply all information.

Railway Arrangements.—The following reduced fares have been arranged with the railway company for members visiting Shellbeach:—

1st Class return, 8*s.*; 2nd Class return, 6*s.* 6*d.*; 3rd Class return, 5*s.*

Tickets available for one month from date of issue.

Members desiring to avail themselves of these reduced fares are required to produce vouchers at the booking offices. Vouchers can be obtained from the Secretary of the Aero Club. Trains leave Victoria, Holborn, or St. Paul's.

For the convenience of Members, the best train is the 9·45 a.m. from Victoria, arriving at Queenborough 10.55. At Queenborough change to the Sheppey Light Railway for Leysdown (Shellbeach), which is ¾-mile from the flying ground.

HAROLD E. PERRIN,
E. CLAREMONT, CAPT. R.N.,
Joint Secretaries.

The Aero Club of the United Kingdom,
166, Piccadilly, W.

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Scientific Training for Flyers.

AT its meeting on Friday of last week, the Governing Body of the Imperial College of Science and Technology approved of a scheme submitted by Mr. Gerald Balfour for dealing with aeronautics and scientific instruction and research in subjects connected therewith. Next session it is proposed to institute a fourth year, or advanced course, for students who have already received a good scientific training, and to arrange for lectures by recognised authorities and the establishment of research scholarships, tenable by qualified persons irrespective of residence or place of previous education. One such scholarship of the annual value of £50 had been offered by the Women's Aerial League, and it is hoped that facilities will be afforded for scholarship holders to undertake part of their work at the National Physical Laboratory.

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"Motors for Aerial Navigation."

ON Wednesday last, before the Institution of Automobile Engineers, Mr. J. S. Critchley read a paper on "Motors for Aerial Navigation." The next meeting will be held on December 9th, when Mr. F. W. Lanchester will be the speaker, taking as his subject "Tractive Effort and Acceleration of Automobile Vehicles on Land, Air, and Water."

Berlin Naming Streets after Aviators.

BERLIN, like other places, suffers from the difficulty of devising suitable names for its streets, and it has been decided by the municipal authorities to name five new streets in the east end of the city after prominent men in the flying world, the names selected being Zeppelin, Gross, Parseval, Wright, and Bleriot.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

(NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary.)

Aeronautical Society of Great Britain (53, VICTORIA ST., S.W.).

AT a meeting of the Council, held on November 8th, at the Society's offices, the following were elected members:—Roger W. Wallace, K.C., John Dunville, C. R. L. Kenworthy, Pha Htaw, B. H. Batassanian, Alex. Thiersch, Dr. Vaughan Bateson, F. L. Rawson, H. D. Cutler, and H. E. Holtorp.

On Friday, December 10th, a General Meeting of the Society will be held at the Royal Society of Arts, John Street, Adelphi, when the silver medal of the Society will be presented to Mr. S. F. Cody in recognition of his services to aeronautics, and the following papers will be read:—"The Limitations of Aerial Bombardment by International Law," by Col. F. G. Stone, and "The Future Work of the Aeronautical Society," by Col. J. D. Fullerton, R.E.

Glasgow Model Aero Club (101, ST. VINCENT STREET).

THE weekly meeting of the above club was held in Duncan's Temperance Hotel, on Friday, November 12th inst., when there was a large attendance, Mr. Jas. Brown, President, in the chair. The club is now in possession of permanent meeting rooms and offices at 101, St. Vincent Street, Glasgow, where it is intended to establish a workshop and library, several comprehensive volumes having been added to same by Mr. A. C. D. Smith, Vice-President. The club also possess a private flying-ground, given by Mr. Walter Creber, one of its members.

It is intended to hold an exhibition of model aeroplanes and accessories, in Glasgow, from December 31st to January 8th, and two gentlemen, Messrs. Lewis and Ellis, have generously presented prizes to be awarded in competition at this exhibition.

Full particulars of the above will appear shortly, or can be obtained from the Secretary at above address.

Midland Aero Club (THE BUNGALOW, STECHFORD, BIRMINGHAM)

ON Saturday last a most successful series of competitions for model aeroplanes was carried out at Sutton Park in the presence of a large crowd of spectators, which towards the end must have numbered very nearly three thousand. Medals were offered for the best flight by a monoplane, the best flight by a biplane, and the best model made by the competitor. There were about twenty competitors, and although the official awards have not yet been issued it appeared that Mr. T. W. K. Clarke's flew the longest distance, while Mr. P. B. Smith's biplane, which won a gold medal at the recent competition at Wembley Park, also made some good flights. Among the others who obtained good results from their little flyers were Dr. Ratcliff, Mr. G. Barratt, sen., and Mr. G. C. Maillard with monoplanes, and Mr. W. Beresford with a biplane. Mr. Ivy Rogers, hon. sec. of the club, and Mr. Dennison acted as judges. At the conclusion of the trials the spectators went to another part of the park, where Mr. J. H. Else was practising gliding on a full-sized machine, but he did not succeed in launching his machine in the air. Several times the glider was run down the hill, but the velocity attained was not sufficient to lift it from the ground.

In the evening, an exhibition of models, as well as the full-sized aeroplane of Mr. Maxfield, was held in the Royal Hotel.

Northumberland Aero Club (WENTWORTH PLACE, NEWCASTLE).

ON Saturday last, November 13th, the members of the Northumberland Aero Club met by invitation to witness an attempt at flight by Mr. Parkinson on his Bleriot machine. Some 300 members and friends were present at Wideopen, a little way beyond Gosforth Park, and considerable interest was evinced in the aeroplane. After a time had been allowed for inspection, the flyer was wheeled into position, and the engine started. But almost immediately the propeller burst, one blade flying off, and burying itself in the ground, fortunately without doing any damage. No spare propeller being available, the proceedings were brought to an abrupt conclusion, but on the following day, as recorded on page 747, Mr. Parkinson met with greater success.

Oxford Aero Club.

AT the meeting held on Wednesday, the Oxford Aero Club was called into being. Mr. Latham was elected a Vice-President, and Lord Valentia has been asked to become the President.

Scottish Aeronautical Society (185, HOPE STREET, GLASGOW).

AT the opening meeting of this Society to be held on Wednesday next Professor Barr will take the chair, and the speakers will be Professor Biles, Mr. Hugh Reid, and others. There will be a display of models, and Messrs. D. G. Anderson and G. P. Currie will show a number of lantern slides. Applications for tickets should be made to the Secretary. The Honorary President of the Society is the Duke of Argyll, and Lord Provost M'Innes Shaw is Hon. Vice-President.

Sheffield and District Aero Club (36, COLVER ROAD).

AT a meeting held on the 11th inst., at which Mr. A. V. Kavanagh took the Chair, the above club was successfully launched. The Chairman opened the meeting with a most interesting address, in the course of which he said that at the present time—"the day of aviation"—there was greater scope for inventive faculty than there had ever been before. Continuing, he expressed his belief that the next few years would witness great strides in aeroplane construction, and he saw no reason why Sheffield should not be to the fore in this direction. He hoped that the club would soon enjoy a large membership, and advised those present, and all others interested in flying, to join hands and work together. Antagonism was altogether out of place at the present stage. Discussing the objects of the club, the secretary proposed to forward the cause of aerial navigation in all its branches, by interchange of ideas, model demonstrations by way of competitions, glider and aeroplane experiments and trials, and also the reading of papers, followed by discussions. Every assistance should also be given to promoters of flight meetings. The resolution was carried unanimously. It was then decided that during the winter meetings be held fortnightly. The subscription was fixed at half-a-guinea for founder members, the limit number of the latter to be decided on later. An amendment by Mr. A. Whitworth, that persons under 21 be admitted to the club at a subscription of 5s., was carried.

The Secretary briefly explained the attitude of the provincial clubs and the Aero Club, but it was decided that the matter was somewhat premature, in view of the club having only just been formed, the Chairman remarking that such an important question needed much more consideration than time would allow that evening. A working committee was then elected, consisting of the following gentlemen: Messrs. Hall, Hayward, Hastings, Heeley, Wightman (Hon. Sec.), Wingfield, Whitworth, Pashley (Hon. Treasurer), Roper, O'Brien, Moon and Sowersby. Designs for the club badge were submitted, but it was decided to defer the matter over to a subsequent meeting. Members were then enrolled, and a good number of subscriptions were paid in. The Chairman, Mr. A. V. Kavanagh, promised to read in English some French aeronautical papers at a subsequent meeting. The meeting was closed with a very hearty vote of thanks to the Chairman. The Secretary, Mr. Wightman, will be very pleased to answer inquiries from persons wishing to become members of the club.

S.W. England Aeronautical Soc. (51, ST. LEONARD'S RD., E. SHEEN)

A LARGE number of members assembled at the club aero works, Down Place, King Street, Hammersmith, on Sunday, at 5.30, for the General Meeting. Messrs. A. J. Fransella, W. Cochrane and J. L. Warsop were appointed as delegates to the Aero Club Conference. The Technical Committee was instructed to start the aeroplane immediately. A propeller of sufficient dimensions was kindly offered by Mr. William Cochrane, and the loan of a 30-h.p. aero engine of original design is assured.

Yorkshire Aero Club (63, ALBION STREET, LEEDS).

EARL FITZWILLIAM has accepted the unanimous invitation of the committee of the Yorkshire Aero Club to become their President. His Lordship has taken a most active interest in aviation for some time, and recently purchased a Bleriot monoplane. Among the members just elected to the club are Mr. Robert Armitage, M.P., and Mr. Hamar Greenwood, M.P.

At a meeting of the club held on Tuesday week, it was decided to hold a model-flying competition for members next February, and arrangements are being made to obtain the private use of a large and lofty building in Leeds for practice. A resolution was adopted in favour of encouraging the formation of branches of the club in various large centres in the county, the committee offering to co-operate with any local gentlemen in any large centre where there is a reasonable prospect of forming a successful branch.

It was reported that the membership was now 250, and members will meet every Tuesday evening in the New Exchange, Briggate.

COMPETITIONS AND RECORDS.

New Records Passed.

AT the last meeting of the Commission Aerienne Mixte, the following records were officially passed :—

Altitude.—Count Lambert, October 18th, 1909, 300 metres.
Speed.—Henry Farman, 200 kiloms. in 3h. 42m. 34s.
Distance.—Henry Farman, 234·212 kiloms.
Duration.—Henry Farman, 4h. 17m. 53⅘s.
Time.—Henry Farman, 2 hours, 108·93 kiloms; 3 hours, 162·276 kiloms; 4 hours, 215·622 kiloms.

The above records of Henry Farman were made in the course of his long flight at Chalons on November 3rd, 1909, while Count Lambert's performance was during his daring flight from Juvisy to the Eiffel Tower and back.

"Prix de la Tenue de l'Air."

AT the last meeting of the Aero Club of France the present standing of the entrants for the above prize was decided upon. It may be remembered that the prize is to be awarded to the aviator who, between May 15th and December 31st, 1909, has flown the greatest cumulative distance in events officially held under F.A.I. rules. At present Paulhan is first with 435·514 kiloms., Tissandier second with 315·410 kiloms. and Bleriot third with 191·2 kiloms. Delagrange and Rougier are fourth and fifth with 76·25 and 60 kiloms. respectively. It is not necessary for the flights to be made in France. All performances officially timed by representatives of the F.A.I., whether in France or any other country, count.

Flight Records.

THE Commission Aerienne Mixte have decided to still further sub-divide the series of records by making a new class to include "landings" during the progress of the flight. This has been done in order that a man may not altogether lose a record because a part of his machine touches ground in the course of his flight, although in that case he would be disqualified from obtaining the ordinary record. It may be remembered that in our issue of June 26th we gave the list of records recognised in France, and we now repeat them for the benefit of new readers. Records are primarily divided into two groups: (1) Those made in a closed circuit, and (2) those made otherwise. They are sub-divided into (*a*) records made without landing, and (*b*) records in which the machine touches ground during the performance; (*c*) records made by the aviator alone, and (*d*) records made with passengers. The different classes of records are as follows: (1) longest distance; (2) longest duration; (3) best speed over 1, 2, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 350, 400, 450, 500, 750, 1,000 kiloms., progressing by 250 kiloms above 1,000; (4) best speed in ¼, ½, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 18, 21, 24 hours, and every 12 hours beyond 24; (5) best speed expressed in kiloms. per hour; (6) greatest height reached, being measured above the starting point.

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AVIATION NOTES OF THE WEEK.

Gold Medal of the Aero Club of France awarded to Count Lambert for his magnificent flight from Juvisy round the Eiffel Tower and back.

New Flyers in Great Britain.

AFTER his successful trial flights during the beginning of last week, Mr. Ogilvie had to suspend operations at Camber, on Thursday, owing to an accident to the motor on his Wright machine. Both during the morning and afternoon of Thursday he made flights lasting about ten minutes, his speed averaging round about 50 miles an hour. The accident occurred when Mr. Ogilvie was still in the air, but he promptly shut off the engine and came down safely.

On Saturday last Mr. Parkinson made another trial with his Bleriot machine, but the propeller fractured and the test had to be abandoned for the day. Repairs were executed overnight, and on Sunday afternoon Mr. Parkinson had the satisfaction of rising into the air, the machine making a short flight of 200 yards at a height of about 10 feet, much to the delight of the thousand or more sightseers who had been watching the trials.

Mr. Cody at Liverpool.

BY way of preparing for his attempt to fly from Liverpool to Manchester for the £1,000 Hartley Prize, Mr. S. F. Cody commenced practising with his machine on Monday on the Aintree racecourse. Two short flights were indulged in, and the second ended in a field about 3½ miles from the starting point, the hasty descent being necessitated by sparking-plug troubles.

On Tuesday afternoon Mr. Cody attempted to fly from Maghull to Aintree, but had not gone far before he met with misfortune. He went slightly off his course, and when trying to get back again found himself faced by a high hedge. He decided to come down immediately, but could not bring the machine to rest in time to avoid a collision with the hedge. The machine was somewhat damaged, but only requires a few days for repairs.

Mr. Cody will have to look to his laurels, for a rival has appeared on the Aintree course in the person of the Rev. S. Swann, Rector of Crosby, Ravensworth, who has a monoplane of the Santos Dumont type fitted with a 40-h.p. motor.

Public Places as Stations for Flyers.

IN the course of a paper by Mr. H. Inigo Triggs, read before the Royal Institute of British Architects on Monday night, on the "Planning and Laying Out of Public Places," the author said that in view of the rapid strides which were being made in aviation the necessity for trial grounds and alighting places would soon make itself felt. He hoped that he might not be considered too visionary in suggesting that the day might not be far distant when, perhaps, Hyde Park itself would furnish the site for a new form of place, the aviation place, with gigantic sheds able to accommodate a fleet of dirigibles.

An Airway to Brighton.

SPEAKING at the annual dinner of the S.M.M.T. Agents' Section, on Tuesday evening, Mr. S. F. Edge advised the agents to keep their eye on aeroplanes. They ought to consider the commercial side of aerial navigation. Already it was cheaper for one or two people to travel from point to point by air than by motor car. There was no wear and tear of tyres. He suggested the promotion of an airway of 200 ft. width of clear ground, say, from Purley Corner to Brighton. Though they might laugh at his suggestion, the time might come, he thought, when his airway would be an accomplished fact.

Shoreham Aerodrome.

AT a recent meeting of the Shoreham Harbour Trustees an application was received from Aviation Finance, Ltd., for permission to erect a landing jetty on the south bank of the river opposite Old Shoreham and next to the proposed aerodrome. The application was approved subject to the payment of £1.

Aeroplane Building at Cowes.

WITH its reputation as a centre for the production of "white wings" and other craft so dear to the heart of the yachtsman, and still later by the construction of high-speed racing motor boats, it seems quite fitting that Cowes should make a bid to secure a share at least of the coming industry in connection with the making of flying machines. It is announced that Messrs. S. E. Saunders and Sons are organising a department for building flyers.

£1,000 "Daily Mail" Prize.

THE all-British Simms magneto was employed by Mr. J. T. C. Moore-Brabazon in gaining the above prize recently at Shellbeach.

"Laking No. I."

WE learn from Messrs. T. W. K. Clarke and Co., the Kingston-on-Thames aeronatical engineers, with regard to the "Laking No. I" machine recently referred to by us as being built at Clacton-on-Sea, that with the exception of the engines and the woodwork of the skids the whole machine has been constructed by them at their works.

Has "Icarus II" "Saved its Bacon"?

LAST week in recording the fact that, with the assistance of Mr. Moore-Brabazon, a pig had flown, we led our readers to believe that for its natural life "Icarus II" would be honoured for its achievement by remaining a pet of its owner. Doubt has now sprung up in our mind, inasmuch as we learn from Mr. William Harris, of West Smithfield, the world-famed pork sausage manufacturer, that he has "acquired" "Icarus II." We fear that "Icarus II" will find, as many previous creators of history have done before, that there is more danger in such notoriety than in humble every-day plodding life.

Practice at Issy.

MR. CLAUDE GRAHAME-WHITE has been practising at Issy for some time on a Bleriot machine, and during last week made several flights of varying length, some of them being with a passenger. M. Stoeckel, who was at one time famous for looping the loop on a monocycle, is training on a Bleriot of the No. XI type with a view to taking it to South America to give exhibitions there.

Activity at Chalons.

DURING the past few days there has been a good deal of practising going on at Chalons Camp, and the most interesting performances have been those of Mr. Latham and Mme. de la Roche. The former has been trying the new passenger-carrying Antoinette, and on Sunday took up his foreman, Charles, Capt. Burgeat, MM. Somerset, Sands, Kuhler, and Mumm, and Mme. de la Roche. Latham will use his newest machine to instruct purchasers of Antoinette monoplanes by taking them up with him as passengers. Earlier in the day he made a trip of 38 mins. duration on Antoinette X. On Sunday Mme. de la Roche made a flight of 35 mins. duration, and on Monday she took up, on the Wolseley-engined Voisin, M. Chateau, the Voisin instructor, and made several circuits of the camp with him. During last week-end, Mr. Henry Rawlinson on his Farman, MacArdle on a Bleriot, and Kuhler on an Antoinette, were all practising, as well as the pupils of the Voisin

THE MILLS-FULFORD MONOPLANE.—In the above photographs are shown a monoplane very much on the lines of Santos Dumont's "Demoiselle," the chief differences being that this machine has an elevator in front, while the propeller is driven by a chain from a little 4-cyl. F.N. engine.

School, MM. Baeder, Fischer, and Pauwels, while Henry Farman made one or two test flights, all of short duration.

Guyot in Russia.

DURING last week Guyot was giving exhibitions of flying on a Bleriot monoplane over the Imperial race-course at St. Petersburg. On the 14th inst., about 20,000 persons watched the trials, the best being one of ten minutes duration, in the course of which an altitude of 40 ft. was reached.

The Cannes Meeting.

AT a meeting held on the 12th inst., and presided over by the Mayor, it was decided to proceed immediately with the organisation of a flying meeting to be held on the Napoule aerodrome from April 3rd to 10th, under the joint control of the Aero Club of France and the Cannes Ae.C. It is anticipated that the prizes offered will amount to at least £4,000.

Wrights' American Army Pupils.

ALTHOUGH very little has been heard of the two American Army officers who have been instructed in the use of the Wright flyers by Wilbur Wright, both have proved adepts at the art of flying. After three weeks' instruction Lieut. Lahm was able to make a solo flight of 13 mins., while his comrade, Lieut. Humphreys, remained aloft for 8 mins. It is noteworthy that in most of his flights at the Military College Park in Maryland, Wilbur Wright has eschewed the aid of the starting apparatus.

Touring by Monoplane.

ON his return from the North of Europe, Delagrange is considering the question of flying by short stages from Paris to Bordeaux. He says that he will only carry a valise and a box of tools, and when he decides to make a stop he will fold up the wings of his Bleriot machine and run it into an ordinary garage. It sounds quite a delightful idea!

The Bordeaux Aerodrome.

CONSIDERABLE progress is being made with the aerodrome at Croix-d'Hins, near Bordeaux, which is being prepared in anticipation of the flying week to be held there by the Aero Club of France next year. M. Bleriot's aeroplane works and school are also now nearly ready to commence work. The latter is to open on December 1st, and it is anticipated that the works will be employed at the former very shortly.

Regulation of Flight in Belgium.

UNDER the auspices of the Aero Club de Belgique, a conference of the various Belgian aero clubs was recently held, at which several important decisions were come to regarding flying in Belgium. In future no meeting will be recognised unless it is held under the auspices of the Belgian Aero Club or one of its affiliated clubs, and the details regarding the organisation of such meetings will be scrupulously inquired into. Also, after the end of this year aviators taking part in meetings will be required to have a licence, and these licences will only be granted after an examination. The clubs taking part in the conference were those of Hainaut, Liege-Spa, Namur, Ostend-Littoral, and Flanders.

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SALTERS' COMPANY AND FLIGHT.

LAST Wednesday week the Salters' Company entertained at their Hall a number of guests interested in aviation. Among those who supported the Master, Mr. W. M. Hewetson, were Mr. Roger W. Wallace, K.C., Chairman of the Aero Club, the Hon. C. S. Rolls, Mr. J. T. C. Moore-Brabazon, Major Baden-Powell, Sir E. Ray Lankester, Dr. R. T. Glazebrook, Col. J. L. B. Templer, and Mr. F. H. Butler. The toast of "Aviation" was proposed by the Master, who said it was a new toast in a City Hall. He regretted the absence of M. Paulhan, who was to have been present, but had been suddenly called to France. He, however, had seen Paulhan flying at Weybridge, and had been greatly impressed by his wonderful feat. Mr. Hewetson also referred to the winning of the *Daily Mail* £1,000 prize by Mr. Moore-Brabazon, who was present with them. In replying, Mr. Roger Wallace said it was indeed pleasant to find a City Company extending its hospitality and encouragement to a totally new branch of science. He had been asked whether there was any bird which used the rotary motion to maintain flight, and he had been told of one by Professor Lankester, who probably knew more about bird flight than any other man in this country. There was the great difference between animal mechanics and what he might term mechanical mechanics. When man came to apply mechanics he was only able to do so in a manner different from the animal motions. They saw it in the horse, for instance, which used a totally different means of locomotion from that adopted by man in the working out of the problem of progress on land. In conclusion, he referred to the question of defence. He was firmly of opinion that the proper understanding of aviation would make our island impregnable, not only from the sea, but from the air.

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FLYING ROYAL MAIL.

ON Monday evening at the November dinner of the New Vagabonds' Club, the guests included several prominent men interested in flight matters, among them Dr. Glazebrook, Mr. J. T. C. Moore-Brabazon, and Mr. Harold Piffard. The chair was taken by Mr. Cecil Harmsworth, M.P., who is a member of the Parliamentary Aerial Defence Committee, and he concluded his speech introducing the toast of "The Guests" by referring to the German Army dirigible manœuvres, and said it was almost dangerous that we should be inexperienced in these matters. In reply, Mr. Moore-Brabazon pointed out the great facilities which were extended by the French Government to flying experimenters; and Dr. Glazebrook referred to the great number of problems in connection with aviation which still awaited solution.

Mr. Rudolph Lemieux also replied, and said he was a man of one idea—cheap postage and cables in the Empire. If as Postmaster-General for Canada he did not succeed in reaching that goal, his people would cancel existing contracts with steamship companies and land conveyances, and make new ones with the aviators. He felt there was more hope in that direction than in the old methods. In our Universities and schools, youths and children should be taught the principles of aviation, because it was the question of to-day and to-morrow. Englishmen must lead and not follow in it.

CORRESPONDENCE.

*** *The name and address of the writer (not necessarily for publication)* MUST *in all cases accompany letters intended for insertion, or containing queries.*

THE AERO CLUB AND THE DONCASTER MEETING.

To the Editor of FLIGHT.

SIR,—So much has been said about the attitude of the Aero Club with regard to the recent Aviation Meeting at Doncaster, that we think it only right to let the public know the real facts of the case. The Doncaster Meeting was not sanctioned by the Aero Club because the Aero Club considered that in the infancy of aviation it was not in the interest of this new sport to hold two concurrent meetings. This has been exemplified constantly abroad, where meetings were duplicated, with the result that one, if not both, of the meetings were failures on account of the lack of aviators. But further, the Aero Club were cognisant of the fact that more than one syndicate was endeavouring to promote the Doncaster Meeting, and as they had no knowledge of the financial resources of these syndicates, the Aero Club, who are under a distinct obligation to protect the interests of foreign competitors at British aviation meetings, could obviously not act in any way as sponsors for such a meeting. This position taken up by the Aero Club has been fully justified, as they are now in receipt of letters and telegrams from abroad complaining, firstly, on the part of a competitor at Doncaster, that his prize money is not forthcoming, and, secondly, that his aeroplane is detained in London as the promoters of the meeting have failed to pay the cost of its transit back to France in accordance with his agreement. He now seeks the assistance of the Aero Club towards obtaining his prize money and gaining possession of his aeroplane.

It will doubtless be remembered that, previous to the meeting at Doncaster taking place, there was litigation in the Courts as to the division of profits, if any, resulting from the meeting, and, in consequence, a receiver was appointed by the judge. Since the meeting, however, the scramble is not as to who should share the profits, but as to who is responsible for the loss.

I am, Sir, yours faithfully,
HAROLD E. PERRIN, Secretary.

A MODEL PETROL ENGINE.

To the Editor of FLIGHT.

SIR,—In reference to Mr. H. Jerrard's letter in a recent issue *re* light petrol engine, I think I could manage to make him a single-cylinder petrol engine, to weigh under 3 lbs., and drive his 10-in. propeller about 1,300 revs. per min. I enclose photos of a 4-cylinder petrol engine (which I believe to be the lightest in the world) that I have constructed for my large model aeroplane, 7 ft. 6 ins. by 8 ft. span. The engine is V-type, steel cylinders, cast-iron heads, aluminium crank-case, steel fly-wheel. It is fed by double float-feed carburettor, ignition by single coil and distributor. The bore is 1¼ in., stroke 1½ in., it develops about 1¼-h.p., and easily drives 27-in. propeller (28 in pitch) at 1,400 revs. per min. The engine complete, as shown, weighs under 8 lbs. I should be pleased if you could find room for this in your next issue, as I think it would be very interesting to readers of your most valuable paper.

Yours faithfully,
Tottenham. D. STANGER.

"SAVE US FROM OUR FRIENDS!"

To the Editor of FLIGHT.

SIR,—With regard to the letter signed "A Member of the Aeroplane Club of G. B. and I.," which appeared in your issue of October 30th, as another Liverpool member of the above Club I would venture to express the opinion that, if the writer has derived no benefit from his membership it is his own fault.

Personally I feel greatly indebted to this Club for much useful information and help in technical and other matters received in reply to communications addressed to headquarters. If your correspondent feels that he is not getting value for his money let him avail himself more fully of the privileges offered.

Yours faithfully,
Sefton Park, Liverpool. P. TH. PSICHA.

AERO MOTORS.

To the Editor of FLIGHT.

SIR,—In my letter published in your last issue I am made to say, "with valves in the cylinder-head the cylinder would be 'self-securing.'" This should read "self-scouring."

Yours faithfully,
HOLTEC.

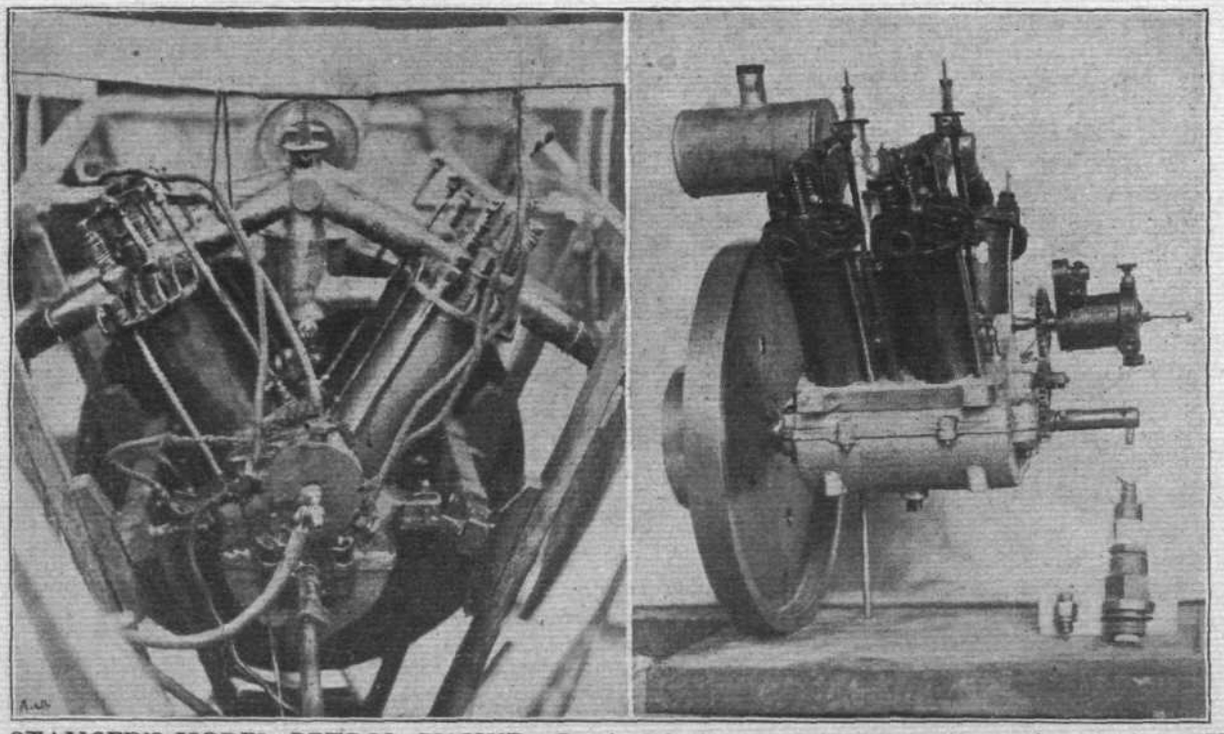
WEIGHT OF MODELS.

To the Editor of FLIGHT.

SIR,—In answer to your correspondent M. M. W. in November 13th issue, I have pleasure in telling him, if you will allow me, the result of my experience in model monoplane building.

I have built a thoroughly successful one, the result of months of experiment, of which some details are as follows:—

Total area of lifting surfaces, 2½ sq. ft. Wings, double cambered, 32 in. tip to tip and 9 in. wide; constructed of 2 main stays of white



MR. STANGER'S MODEL PETROL ENGINE.—On the left the motor is in position on the aeroplane. Note small carburettor. In the right photo an idea of the size of engine may be gathered by comparing it with the ordinary sparking-plug seen by the side, whilst to the left of this is one of the special plugs used on this motor.

wood, with whalebone strips above and below to orm cambering-ribs (in a large model, "Venesta," three-ply wood is excellent for these ribs). The wings and tail are silk covered. The tail-frame is constructed of sheet aluminium and whalebone.

Length of model from propeller to tip of tail, 30 in. Propeller, 4-bladed 10-in. diameter, of tin, with wooden boss. Motive power, a skein of ⅛-in. elastic, consisting of 8 strands 20 in. long, stretched on a long frame of Memel oak situated below and independent of the light frame carrying the tail and vertical fin, and so free to twist somewhat by the action of whatever powered elastic is used, without altering the alignment of the wings and tail.

Total weight 18 oz., of which 2 oz. is lead ballast, situated right orward on the lower part of the main frame.

The angle of incidence as to the main frame is very slight. Both wings and tail are adjustable.

This model is a perfect glider, and with motor as above fully wound, direct-drive, will fly 100 yards. There are, of course, alighting runners.

I am about to fit gearing and more powerful elastic, and expect much longer flight. The general appearance is that of the "Antoinette."

I shall be pleased to give your correspondent any further particulars he may wish for.

Yours, &c.,

Downham Market. (Rev.) HAROLD KELK.

AVIATION AND "SHELL" MOTOR SPIRIT.

To the Editor of FLIGHT.

SIR,—Having been in close touch with Mr. Paulhan since his arrival in England, I think it right to make a statement on the question of motor spirit used by him, as in several instances the facts have been misstated.

Briefly, Mr. Paulhan and Mr. Farman, who both used the same machine in Blackpool, used ordinary "Shell" motor spirit the specific gravity of which is ·715. Mr. Paulhan was so satisfied with this that at his request arrangements were made for supplying him with exactly the same quality for his flights at Brooklands. As you are aware, on the first day there was no flying; on the second day Mr. Paulhan made two preliminary flights, and discovered that the atmosphere had changed considerably, and in consequence required a heavier spirit. Needless to say this caused the undersigned some surprise, but upon Mr. Paulhan's assurance that the colder the atmosphere the heavier the fuel required, and that as a matter of fact in the event of intense cold the "Gnome" engine was capable of being run upon heavy fuel, a supply of ·760 spirit, which the British Petroleum Co. market under the brand of "Crown," was obtained for Mr. Paulhan. This operation took a matter of two hours, and in the meantime Mr. Paulhan had decided to make a further experiment on ·715; the cold weather, however, brought him down with a frozen jet. The ·760 spirit was then taken on to the field, and the aeroplane tank was filled up with it, and his record shows that a magnificent flight took place on ·760 spirit; in fact, so pleased was Mr. Paulhan with this, that he requested me to provide him with a still heavier spirit for use on the following day. This was done, and a spirit with a gravity of ·780 was brought along. The following morning (Saturday) Mr. Paulhan decided to use ·780 spirit, and with regard to the statement that the petrol vendors beguiled Mr. Paulhan into being silly, and make a lot of changes with his jet and air-valve, I may say that the statement is absolutely without foundation. For your information, from the arrival of M. Paulhan in this country to his departure, he only used ordinary "Shell" motor spirit, which, as previously stated, has the density of ·715, with the exception of Friday afternoon; he certainly tried ·780 on Saturday, but all concerned had nothing whatever to do with it—it was entirely at his own wish.

Yours faithfully,

22, Fenchurch Street, E.C. J. CATES.

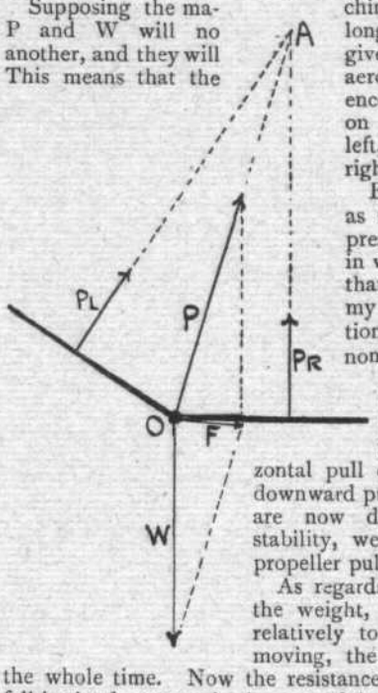
P.S.—For your information, the only lubricant used by Messrs. Paulhan and Farman in flights in the United Kingdom consisted of 75 per cent. castor oil mixed with 25 per cent. of "Shell" motor spirit.

THE DIHEDRAL ANGLE.

To the Editor of FLIGHT.

SIR,—The great importance of this question must be my excuse or venturing to join in the controversy. Mr. Maurice Olley's explanation, although undoubtedly the correct one, is, I think, a little confusing as far as the diagram is concerned. I have accordingly redrawn it, adding the lines P_R and P_L to represent the upward pressure on the right and left-hand wings respectively. A little thought will show that when the monoplane is travelling on an even keel, the point, A, at which these lines meet must be vertically above the centre of gravity—which, by the way, is by no means necessarily situated at the point, O, as both your correspondents appear to assume. In order that all the diagrams may correspond, I have likewise assumed that it occupies this position.

Under these conditions the weight W and the resultant upward pressure P are opposed to one another, and the aeroplane tends to rise or fall according as P is greater or less than W.



Supposing the machine to heel over from any cause, P and W will no longer be acting in line with one another, and they will give rise to a resultant force, F. This means that the aeroplane will move sideways, encountering a greater pressure on the right wing than on the left, and being thereby gradually righted.

Excellent, and often necessary, as such force diagrams are, the present instance, I think, is one in which their use obscures, rather than elucidates, the problem. To my mind the following explanation sufficiently explains the phenomenon:—

Let us assume the monoplane to be flying directly away from us. There are two forces causing it to move: (1) the horizontal pull of the propeller, and (2) the downward pull due to the weight. As we are now dealing only with "lateral" stability, we are not concerned with the propeller pull at all.

As regards the downward force due to the weight, it must be remembered that, relatively to the air through which it is moving, the aeroplane is actually *falling* the whole time. Now the resistance of the air which opposes this fall is clearly greater in the case of the right-hand wing, which meets it squarely, than in that of the left, which meets it at an angle. The left-hand wing will, consequently, "fall" at a greater rate than the right, until the aeroplane is again running on an even keel.

In connection with the fears which have frequently been expressed as to the effect of side gusts on an aeroplane having wings set at a dihedral angle, Mr. Latham's recent flight in a gale varying rapidly between 12 and 48 miles per hour is of extreme interest.

I am, Sir, yours faithfully,

Hendon. KENELM EDGCUMBE.

It will be noticed that our correspondent this week draws attention to an aspect of the self-righting principle of the dihedral angle which has not previously been mentioned, and that is the relative supporting value of the two wings, considered in respect to an actual downward travel through the air. This is an especially useful way of looking at the problem when projected areas are taken as a basis for explaining the automatic stability of the principle.—ED.]

AMATEURS AND MODEL FLYERS.

To the Editor of FLIGHT.

SIR.—May I venture to differ from the opinion expressed in your valuable little paper by Mr. McKeown, with reference to a separate class being necessary in model-flying competitions for amateur-made ones.

Surely any ordinary amateur, if he had not sufficient originality of his own, could borrow or buy any commercially-made model, and, by substituting more carefully-made materials of construction, introducing a lighter material, fitting mathematically worked-out propellers, or any of a hundred-and-one methods, make such an improvement on the design that it would easily beat its own brother in any competition.

But surely he would not suggest that the manufacturers have bought up all the brains! Why not make an original flyer of his own? We know hardly anything about aviation yet. There is lots to find out.

To clear myself from the accusation of merely talking and showing nothing practical, may I venture to cite my own case.

I have made in all twenty-seven separate models. The first were ghastly failures, but learning a little from each attempt I have at last arrived at a type which has proved itself most eminently successful. Being naturally a prejudiced person I will not say much about it, except that it has, on a wind covered a quarter of a mile of ground several times, and seems quite uncapsizable. It is only a 10-oz. model, driven by elastic. I gave a demonstration of its

capabilities before the representative of a large firm of buyers this week; not only was he perfectly satisfied that my model had beaten record, but gave me a large order for them. I was led to accept it by the fact that I wish to devote the money to further research. So Mr. McKeown will have another professional model to compete against!

My point is this:—If I, an amateur of the amateurs, an artist by profession, can with few tools make rather a successful model, surely anyone else can do the same.

Anyhow, if I could not make a decent one, I do not think I would have the courage to confess it in print!

Yours sincerely,

Highams Park. C. FLEMING-WILLIAMS.

To the Editor of FLIGHT.

SIR,—In reply to Mr. P. McKeown's letter in your last issue, *re* the above, my Committee are also of the opinion that it is not fair that model aeroplanes built in thousands by large manufacturing firms should compete in the same class as a model built by an amateur competitor.

A few weeks ago we drafted a few of the events to govern our model competition that will be held in one of Blackpool's large ball-rooms in the near future, as follows:—

Event 1.—For models, made by the competitor, and a member of the club, span not to exceed 4 ft.

Event 2.—For models, made by the competitor, and a member of the club, span not to exceed 3 ft.

Event 3.—For bought models, competitors to be members of the club, span not to exceed 4 ft.

Event 4.—For bought models, competitors to be members of the club, span not to exceed 3 ft.

Event 5.—For models, made by competitor, executing best circular flight. Open to non-members.

Event 6.—For models made by competitors under 18 years of age. Open to non-members.

Event 7.—Open competition to the United Kingdom for longest and straightest flight. Span of model not to exceed 4 ft. Motive power elastic.

I think you will agree with me that the above events will make a good evening's sport, seeing that the competition will take place in "still air."

Yours sincerely,

JACK KEMP, Hon. Sec.

Blackpool and Fylde District Aero Club.

AVIATION PORTS.

To the Editor of FLIGHT.

SIR,—I have been looking over the Woodhouse Farm here with a view to its suitability for aviation purposes, and find there is more area than at Juvisy. One plot of 40 acres contains about 20 acres of, I suppose, ideal taking-off ground, being level, smooth and hard grass-land. If in Mr. Seton-Karr's opinion a good aerodrome would do more for British aviation than all the prizes in the world, then it should be worth while for interested parties to look at the site here which I would be very pleased to show. I may add there is plenty of land adjoining (mostly to the west) suitable for flying over, and there is, as you know, an immense population in the district about the Tyne, Wear and Tees.

Yours faithfully,

North Hylton, near Sunderland. ROBERT WELFORD.

MODELS AT THE BLERIOT BANQUET.

To the Editor of FLIGHT.

SIR,—I notice in your issue of October 30th a letter from the Motor Supply Co., which would lead one to suppose that the only models lent for the Bleriot banquet, other than those by Messrs. T. W. K. Clarke and Co., were those made by themselves. This is not so. I may say that my two models, which successfully competed at Wembley Park, on September 11th, were also suspended above the Chairman's table. These same models were shown in flight by the bioscope on the same occasion.

Yours faithfully,

Mitcham. G. P. SMITH.

WIRE BRACING.

To the Editor of FLIGHT.

SIR,—I note that one of my old assistants has sent you a sketch of my method of tightening wires, which I was using on my aeroplane at Brooklands some two years ago.

However, I cannot recommend his application of this system. I refer to his continuous bracing with one adjuster. It is obvious if the wire will slip over the points when tightening that the boxes will not be rigid. If the boxes are to be rigid the wires must not slip over the points; in this case you could not tighten with one adjuster in a satisfactory manner.

Yours faithfully,

A. V. ROE.

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